RESEARCH REVIEW TEAM DATA REQUEST

EMC Response

1.) Please provide a copy of the most resent evaluation of the lab or center in pdf format .
a. Was this review internal or external?

- UCAR Review - 1996 (available in paper copy only - I will fax)
- Ocean Modeling Review (report due by end of February 2004)

2.) Please provide a brief history, and mission of your laboratory /center.

NCEP and the Environmental Modeling Center's roots trace back to the Joint Numerical Weather Prediction Unit, formed in 1954, which evolved into the National Meteorological Center's Development Division (DD) in 1958 and ultimately the National Centers for Environmental Prediction in 1995. The DD had a narrowly focused mission on weather and marine applications whereas EMC's mission included climate.

The Environmental Modeling Center (EMC) improves numerical weather, marine and climate predictions at the National Centers for Environmental Prediction (NCEP) through a broad program of development in data assimilation and modeling. In support of the NCEP operational forecasting mission, the EMC develops, enhances and maintains[a] the scientific content of data assimilation systems and models of the atmosphere, ocean, land surface and coupled system, using advanced methods developed internally as well as cooperatively with scientists from universities, NOAA laboratories and other government agencies, and the international scientific community.

3.) Please provide a listing of major customers of the laboratory /center, with a one sentence description of what is being done for them.

EMC provides the scientific and computational development, enhancement and maintenance of all of NCEP's forecast and analysis digital, numerically-based products. Those who require weather, marine, and climate numerical model products on time scales from hourly to one year, including the NWS and NOAA, commercial businesses, and international users benefit from the products EMC provides. Specific major customers include the American Public, the Media, Emergency Managers, Federal and State Agencies, Transportation (aviation and marine), the Investment community, Public Health, Agriculture, Water Resource Managers, Military, Energy, Retail, Recreation, Educational communities, Scientific Researchers and Satellite Operations.

4.) Please provide a summary of research being conducted (Your list of major requirements from the Program Baseline Assessments (PBA) maybe helpful in answering this question.)

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[a] Develop: transition code, algorithms, techniques from research status to operational status on NCEP computers. Enhance: test and improve NCEP's numerical forecast systems via scientific upgrades, tuning, additional observations, in response to user requirements. Maintain: modify current operational system to adapt to ever-present external changes

4a. For each research theme identified above, include a brief explanation of how this research relates to NOAA program areas. (The program areas are those identified in the recent Program Baseline Assessment.)

EMC provides data assimilation, forecast model and gridded product development, enhancement and maintenance to support the customers listed above. In this way, EMC's numerical forecast system development serves Weather and Water, Surface Transportation, Climate (Week 2 to Seasonal-to-Interannual, S/I) Programs.

EMC is poised to support fully NOAA's Ecosystem and Coastal Management Program with its current operational implementation of the Regional Ocean Forecast System (ROFS) covering a large part of the U. S. East Coast, ongoing development of an enhanced real-time ocean forecast system, and operational implementations of system applications in the North Atlantic, world ocean, Northeast Pacific and higher resolution regions in 2005-2007.

4b. Provide the geographic scope of your research - regional, national, global.

EMC's development program covers global, regional (e.g. North America), and national domains on forecast time scales of 1 hour to S/I.

4c Provide the time frames of your research - short term, (0-2 years), medium term, (2-5 years), long term (greater than 5 years).

Time frames for work are 0-2 years for enhancement and maintenance, and 0-5 years for development. All of EMC's work is focused on improvements to NOAA's operational numerical forecast systems and products and services.

5.) Please provide a listing of 3-5 major accomplishments in the last five years.

- Improved tropical climate representation in global forecast model (May 2001)
- 12 km Eta mesoscale forecast system, including improved precipitation physics (Nov 2001)
- NOAA Wavewatch III wave forecast system (March 1999), adopted by Navy (FNMOC, in 2001), and applications to global, regional and hurricanes.
- Improved hurricane initialization system and improved hurricane forecast in both global and regional (GFDL) hurricane models (June 2000, June 2001)
- High horizontal and vertical resolution global forecast system, including use of satellite data over land, increased use of satellite data in stratosphere, community radiative transfer and emissivity models and enhanced data selection algorithm for satellite data (October 2002)

6.) Please provide a summary of legal mandates for the work in the laboratory/center.

- Organic Act of 1890 (15 U.S.C. 313) directs NWS to "have charge of forecasting of weather, the issue of storm warnings."

- Section 204(a)(2) of the High Performance Computing and Communication Act of 1991 (P.L. 102-994, 15 U.S.C. 5501-5528): the National Oceanic and Atmospheric Administration shall conduct research and development in weather prediction and ocean science, particularly in development of new forecast models, in computational fluid dynamics, and in the incorporation of evolving computing architecture and networks into the systems that carry out agency missions.

7.) Attached in Excel format is the compilation of financial and staffing data that your laboratory or line office provided. Please verify that data are correct.

Yes, financial and staffing data contained in Excel spreadsheet for EMC is accurate.

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